

LOCKHEED EL-ECTRONICS COMPANY

AEROSPACE SYSTEMS DIVISION

NASA CR. 160423

16811 EL CAMINO REAL

HOUSTON, TEXAS 77058

TELEPHONE (AREA CODE 713) 488 0080

"Made available under NASA sponsorship in the interest of early and wide dissemination of Earth Resources Survey Program attempation and without liability for any use made thereof."

Ref: 642-6715 Contract NAS 9-15200 Job Order 73-743-28

TECHNICAL MEMORANDUM

BIBLIOGRAPHIC ADDENDA

TECHNICAL REPORTS, PAPERS, AND MEMORANDUMS PUBLISHED UNDER SUPPORTING RESEARCH AND TECHNOLOGY AND OTHER RESEARCH, TEST, AND EVALUATION CONTRACTS FOR THE EARTH OBSERVATIONS DIVISION

N80-18519

(E80-10070) LARGE AREA CROP INVENTORY
EXPERIMENT (LACIE). BIBLIOGRAPHIC ADDENDA,
TECHNICAL REPORTS, PAPERS, AND MEMORANDUMS
PUBLISHED UNDER SUPPORTING RESEARCH AND
TECHNOLOGY AND OTHER (Lockheed Electronics

Unclas G3/43 00070

Approved By:

B. L. Carroll, Manager

LACIE Development

and Evaluation Department

1. Report No. JSC-14278	2. Government Accession No.	3. Recipient's Catalog	No.		
4. Title and Subtitle BIBLIOGRAPHIC ADDENDA. TECHNICAL REPORTS, PAPERS, AND MEMORANDUMS PUBLISHED UNDER SUPPORTING RESEARCH AND TECHNOLOGY AND OTHER RESEARCH, TEST, AND EVALUATION CONTRACTS FOR THE EARTH OBSERVATIONS DIVISION		5. Report Date May 1978  6. Performing Organiza	ition Code .		
7. Author(s) J. B. Aumann		8. Performing Organiza LEC-11651			
9. Performing Organization Name and Address		TO. WORK UNIT NO.			
Lockheed Electronics Company, Systems and Services Division Houston, Texas 77058	NAS 9-15200				
12. Sponsoring Agency Name and Address			13. Type of Report and Period Covered Technical Memorandum		
Earth Observations Division Space and Life Sciences Directorate, NASA/JSC Houston, Texas 77058		14. Sponsoring Agency			
15. Supplementary Notes		ngan dan mendelah dan			
16. Abstract					
An addenda to an earlier biblic test, and programmatic document ment program contractual requirement Disservations Division at Lyndon B. Johnson Space Center	tation generated to satisfy La rements of the Research, Test, the National Aeronautics and	rge Area Crop Invent and Evaluation Bran	ory Experi- ch of the		
			•		
17. Key Words (Suggested by Author(s))	18. Distribution Sta	atement			
Remote sensing research biblic	ography				
LACIE research bibliography					
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	D:		
•			22. Price*		

#### **PREFACE**

In February 1976, a bibliography of reports, papers, and technical memorandums was prepared for the Research, Test, and Evaluation Branch (RTEB) of the Earth Observations Division (EOD) of the Lyndon B. Johnson Space Center (JSC) of the National Aeronautics and Space Administration (NASA). The publications reported in this bibliography were prepared to satisfy requirements of supporting research and technology (SR&T) contracts. These studies covered the general field of remote sensing and would be of interest to persons working in this field. This bibliography (Lockheed Electronics Company, Inc., Technical Memorandum LEC-4688) contains a listing of documents published prior to and through 1974.

The listings herein of reports, papers, and technical memorandums constitute an addenda to the 1976 SR&T bibliography. The documents included in this 1978 addenda were published from 1969 through 1977 but were released for internal distribution subsequent to the initial bibliographic publication. The listings of documents are by publication year and are arranged alphabetically within each year by publishing institution or organization. The parenthetical information given at the end of each entry designates either the RTEB locator file number (institution — volume number) or the Large Area Crop Inventory Experiment (LACIE) Physical Data Library (LPDL) locator file number (XX-XXXXX).

Persons interested in obtaining copies of these reports, on long-term loan, should first write the author of the individual reports. If the report is not available from this source, the Lockheed Electronics Company, Inc., Systems and Services Division, Data Research and Control library should be contacted. If the report is not available through the library, it may be obtained from the RTEB file for a short-term loan.

PRECEDING PAGE BLANK NOT FILMED

# CONTENTS

<b>Organization</b>				Page
1969				
UNIVERSITY OF KANSAS	•			1
1970				
UNIVERSITY OF KANSAS	•			2
1971				
UNIVERSITY OF KANSAS	•			3
1972				
ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN	•		ı •	4
INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSIT	ΓY		•	4
UNIVERSITY OF HOUSTON	•	• •		4
UNIVERSITY OF KANSAS	•	• •	, .	5
1973				
ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN	•			6
UNIVERSITY OF CALIFORNIA AT BERKELEY	٠		•	6
UNIVERSITY OF HOUSTON	•		•	6
UNIVERSITY OF KANSAS	•	• •		6

Organization	Page
1974	
COLORADO STATE UNIVERSITY	. 8
INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY	. 8
LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY	. 8
TEXAS A&M UNIVERSITY	. 9
UNIVERSITY OF KANSAS	. 9
UNIVERSITY OF TEXAS AT DALLAS	10
1975	
COLORADO STATE UNIVERSITY	. 11
ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN	. 11
INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY	. 12
KANSAS STATE UNIVERSITY	. 13
LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY	. 13
PAN AMERICAN UNIVERSITY	. 15
TEXAS A&M UNIVERSITY	. 16
TRW, INC	. 17
UNIVERSITY OF CALIFORNIA AT BERKELEY	. 18
UNIVERSITY OF HOUSTON	. 19
UNIVERSITY OF KANSAS	. 19
UNIVERSITY OF TEXAS AT DALLAS	. 20

Organization	Page
1976	
COLORADO STATE UNIVERSITY	21
EARTH SATELLITE CORPORATION	21
ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN	21
INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY	22
LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY	23
PAN AMERICAN UNIVERSITY	24
TEXAS A&M UNIVERSITY	24
TRW, INC	24
UNIVERSITY OF CALIFORNIA AT BERKELEY	25
UNIVERSITY OF HOUSTON	<b>2</b> 5
UNIVERSITY OF KANSAS	26
1977	
ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN	27
KANSAS STATE UNIVERSITY	27
LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY	<b>2</b> 8
TEXAS A&M UNIVERSITY	30
UNIVERSITY OF CALIFORNIA AT BERKELEY	30
UNIVERSITY OF HOUSTON	31
UNIVERSITY OF KANSAS	

# UNIVERSITY OF KANSAS

Bradley, G. A.: An Analysis of Methods for Calibrating the 13.3 GHz Scatterometer. Technical Report 177-1, Nov. 1969. (REDAF 09-00887)

#### UNIVERSITY OF KANSAS

- Bradley, G. A.: Signal Analysis of the Single-Polarized 13.3 GHz Scatterometer. Technical Report 177-2, May 1970. (REDAF 09-01971)
- Bradley, G. A.; and Young, J. D.: An Analysis of the Effects of Aircraft Drift Angle on Remote Radar Sensors. Technical Report 177-5, Aug. 1970. (REDAF 06-00347)
- Gerchberg, R.: Synthetic Aperture Radar and Digital Processing. Technical Report 177-10, Sept. 1970. (REDAF 09-01367)
- Haralick, R. M.: Discrete Pattern Discrimination Using Neighborly Dependence Information. Technical Report 177-12, Oct. 1970. (REDAF 09-01388)
- Morain, S. A.; and Coiner, J.: An Evaluation of Finé Resolution Radar Imagery for Making Agricultural Determinations. Technical Report 177-7, Aug. 1970. (REDAF 06-00348)
- Morain, S. A.; Holtzman, J.; and Henderson, F. M.: Radar Sensing in Agriculture, a Socio-Economic Viewpoint. Technical Report 177-14, Dec. 1970. (REDAF 09-01550)
- Nossaman, G. O.: Imaged Textural Analysis by a Circular Scanning Technique. Technical Report 177-3, June 1970. (REDAF 09-01364)
- Thomann, G. C.: Panchromatic Illumination for Radar: Acoustic Simulation of Panchromatic Radar. Technical Report 177-11, Sept. 1970. (REDAF 09-01369)

### UNIVERSITY OF KANSAS

Bradley, G. A.: Remote Sensing of Ocean Winds Using a Radar Scatterometer. Technical Report 177-22, Sept. 1971. (REDAF 09-03306)

Henderson, F. M.: Local Level Agricultural Practices and Individual Farmer Needs as Influences on SLAR Imagery Data Collection. Technical Report 177-15, Apr. 1971. (REDAF 09-01970)

Moore, R. K.; and Holtzman, J. C.: Multi-Year Program in Radar Remote Sensing. Technical Report 177-20, Aug. 1971. (REDAF 06-00836)

Thomann, G. C.; Angle, R.; and Dickey, F.: A Fresnel Zone--Plate Processor for Processing Synthetic Aperture Data. Technical Report 177-17, May 1971. (REDAF 09-01972)

Thomann, G. C.; and Dickey, F.: Geoscience Radar Systems. Technical Report 177-18, May 1971. (REDAF 09-01973)

#### ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

An Introduction to ERIM. Aug. 1972. (ERIM vol. IV-A).

# INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY

Bennett, J. O.: Spline Smoothing of Histograms by Linear Programming. Report 275-025-002, Sept. 1972. (Rice Univ. vol. I-A)

de Figueiredo, R. J. P.; and Thompson, J. R.: Power Spectral Density Estimation by Spline Smoothing in the Frequency Domain. Report 275-025-004, Sept. 1972. (Rice Univ. vol. I-A)

Final Report — Phase 1 of the Earth Resources Data Analysis Program (June 1972 — May 1973). (Rice Univ. vol. I-A)

Guerra, V. M.; and Tapia, R. A.: Data Smoothing and Error Detection Based on Linear Interpolation. Report 275-025-006. (Rice Univ. vol. I-A)

Guerra, V. M.; Tapia, R. A.; and Thompson, J. R.: A Random Number Generator for Continuous Random Variables. Report 275-025-007. (Rice Univ. vol. I-A)

Hsia, W. S.; and de Figueiredo, R. J. P.: Optimal Feature Extraction — The Two Class Case. Report 275-025-010. (Rice Univ. vol. I-A)

Jagge, R. K.: A Mathematical Model Concerning Reflectance From a Row Crop. Report 275-025-001, Sept. 1972. (Rice Univ. vol. I-A)

Tapia, R. A.: A Geometrical Interpretation of the 2n-th Central Difference. Report 275-025-005. (Rice Univ. vol. I-A)

Van Rooy, D. L.; and Lynn, M. S.: Use of Spatial Information in Classification of Remotely Sensed Data. Report 275-025-009. (Rice Univ. vol. I-A)

Van Rooy, D. L.; Lynn, M. S.; and Snyder, C. H.: The Use of the Modified Cholesky Decomposition in Divergence and Classification Calculations. Report 275-025-008. (Rice Univ. vol. I-A)

#### UNIVERSITY OF HOUSTON

Quirein, J.: Divergence Consideration II. Report 5, Sept. 1972. (Univ. of Houston vol. II)

#### UNIVERSITY OF KANSAS

- Anderson, P.; Anderson, D.; Barr, J.; Haas, L.; and Minden, G.: Image Processing Applications--IDECS. Technical Report 177-28, Sept. 1972. (REDAF 08-03318)
- Barr, J.; and Anderson, P. N.: IDECS User's Manual. Technical Report 177-27, Sept. 1972. (REDAF 08-03317)
- Coiner, J. C.: SLAR Image Interpretation Keys for Geographic Analysis. Technical Report 177-19, Sept. 1972. (REDAF 09-03305)
- Haas, L.: A Computer to Computer Digital Data Link. Technical Report 177-31, Sept. 1972. (REDAF 09-03580)
- Hardy, N. E.: Interpretation of Side Looking Airborne Radar Vegetation Patterns: Yellowstone National Park. Technical Report 177-24, Sept. 1972. (REDAF 09-03308)

#### ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

Kriegler, F.; Marshall, R.; Lampert, S.; Gordon, M.; Connell, C.; Kistler, R.; et al.: Spectral Analysis and Recognition Computer/Hybrid (SPARC/H): A New Fast Multispectral Recognition System. (ERIM vol. IV)

Proposal for FY73 Investigations Related to Multispectral Imaging Systems in Earth Resources. Volume I — Technical Information. Report ERIM 73-72-L1, Jan. 1973. (ERIM vol. VI-A)

Proposal for FY73 Investigations Related to Multispectral Imaging Systems in Earth Resources. Volume II — Financial Information. Report ERIM 73-72-L1, Jan. 1973. (ERIM vol. VI-A)

#### UNIVERSITY OF CALIFORNIA AT BERKELEY

Investigation of the Feasibility of Making Global Wheat Production Estimates Using Remote Sensing Data. Sept. 1973. (Univ. of Calif. at Berkeley vol. I-A)

#### UNIVERSITY OF HOUSTON

Hall, J. L.: Perturbation and Sensitivity Inequalities in Divergence Calculations. Report 20, Mar. 1973. (Univ. of Houston vol. II)

#### UNIVERSITY OF KANSAS

Bush, T.; and Ulaby, F. T.: 8-18 GHz Radar Spectrometer. Technical Report 177-43, Oct. 1973. (REDAF 09-03255)

Bush, T.; and Ulaby, F. T.: Fading Characteristics of Radar Backscatter From Selected Agricultural Targets. Technical Report 177-48, Dec. 1973. (REDAF 09-03363)

Ulaby, F. T.: 4-8 GHz Microwave Active and Passive Spectrometer (MAPS). Technical Report 177-34, Jan. 1973. (REDAF 08-03251)

Ulaby, F. T.: Radar Response to Vegetation. Technical Report 177-42, Sept. 1973. (REDAF 09-03236)

Ulaby, F. T.; and Moore, R. K.: Radar Spectral Measurements of Vegetation. Technical Report 177-40, Aug. 1973. (REDAF 09-03240)

#### COLORADO STATE UNIVERSITY

Hornung, R. J.; and Smith, J. A.: Investigation of Preprocessing Transformations. Volume I, Incorporation of Spatial Information as Additional Features for Multispectral Land-Use Classification. Final Report, Contract NAS9-12972, June 1974. (Colo. State Univ. vol. I)

Smith, J. A.; Hartinger, G.; and Johnson, T.: Investigation of Preprocessing Transformations. Volume III, Program Description for CSU Multispectral Fourier Analysis Routines. Final Report, Contract NAS9-12972, Dec. 1974. (Colo. State Univ. vol. II)

# INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY

Bennett, J. O.; Estimation of Multivariate Probability Density Functions Using B-Splines. May 1974. (Rice Univ. vol. I-A)

Bennett, J. O.; de Figueiredo, R. J. P.; and Thompson, J. R.: Classification by Means of B-Spline Potential Functions With Applications to Remote Sensing. Report 275-025-015, May 1974. (Rice Univ. vol. I-A)

# LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY

Follestad, B. A.: Computer Analysis of ERTS-1 Imagery and Mapping of Surficial Deposits in a Test Area Within the Monticello North Quadrangle, Ind. Report 111774, 1974. (LARS vol. XI)

Landgrebe, D. A.; and Staff: A Study of the Utilization of ERTS-1 Data From the Wabash River Basin. Final Report for July 1, 1972 — May 31, 1974, Contract NAS5-21773. Information Note 052375, Aug. 1974. (LARS vol. 10-III)

Lindenlaub, J. C.: Guide to Multispectral Data Analysis Using LARSYS. Report 062874, 1974. (LARS vol. XII)

Silva, L. F.; Schultz, F. V.; and Zalusky, J. T.: Electrical Methods of Determining Soil Moisture Content. Report 112174, 1974. (LARS vol. 10-I)

### TEXAS A&M UNIVERSITY

- Feiveson, A. H.; and Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Proposed LACIP Sampling Plan. Technical Report S3, Aug. 1974. (Texas A&M Univ. vol. IX)
- Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Adjustment of Moment Method for Mixed Pixels. Technical Report PE2, June 1974. (Texas A&M Univ. vol. IX)
- Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Combination of Ground Truth Data and Training Area Data for Signature Transfer. Technical Report STI, Sept. 1974. (Texas A&M Univ. vol. IX)
- Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The "ERSATZ" Sampling Plan for the ERTS Satellite I. Technical Report S2, July 1974. (Texas A&M Univ. vol. IX)
- Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. A Proposed Technique for Adjustment of Yield Prediction for Fertilizer Use. Technical Report YFI, Jan. 1974. (Texas A&M Univ. vol. IX)
- Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Sample Design for the ERTS Satellite. Technical Report S1, June 1974. (Texas A&M Univ. vol. IX)
- Microwave Soil Moisture Measurements and Analysis. Progress Report, February April 1974. Report 3058-1, NASA Contract NAS9-13904. (Texas A&M Univ. vol. IX)
- Microwave Soil Moisture Measurements and Analysis. Progress Report, May July 1974. Report 3058-2, NASA Contract NAS9-13904. (Texas A&M Univ. vol. IX)

### UNIVERSITY OF KANSAS

- Oberg, J. M.; and Ulaby, F. T.: MAS 2-8 Radar and Digital Control Unit. Technical Report 177-37, Oct. 1974. (REDAF 09-03414)
- Ulaby, F. T.; Bush, T. F.; Batlivala, P. P.; and Cihlar, J.: The Effects of Soil Moisture and Plant Morphology on the Radar Backscatter From Vegetation. Technical Report 177-51, July 1974. (REDAF 09-03416)

## UNIVERSITY OF TEXAS AT DALLAS

Odell, P. L.; and Kvanli, A. H.: On Solving for the Probability Vector p in Equation Ap = e Where the Columns of a and e Are Probability Vectors.

(Univ. of Texas at Dallas vol. I)

Progress Report, June 1, 1974 — August 31, 1974. (Univ. of Texas at Dallas vol. I)

Progress Report, September 1, 1974 — November 30, 1974. (Univ. of Texas at Dallas vol. I)

ORIGINAL PAGE IS OF POOR QUALITY

#### COLORADO STATE UNIVERSITY

- Smith, J. A.; Berry, J. K.; and Heimes, F.: Signature Extension for Sun Angle. Quarterly Progress Report for Nov. 15, 1974 to Feb. 15, 1975. (Colo. State Univ. vol. III)
- Smith, J. A.; Berry, J. K.; and Heimes, F.: Signature Extension for Sun Angle Volume I. Nov. 1975. (Colo. State Univ. vol. II)
- Smith, J. A.; Berry, J. K.; and Heimes, F.: Signature Extension for Sun Angle Volume II. Nov. 1975. (Colo. State Univ. vol. II)
- Smith, J. A.; and Hornung, R. J.: Investigation of Preprocessing Transformations. Volume II, Application of Fourier Analysis to Satellite Imagery for Land-Use Analysis. Final Report, Jan. 1975. (Colo. State Univ. vol. II)

#### ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

- Annual New Technology Report for Contract NAS9-14123. Report 109600-32-L, May 22, 1975. (ERIM vol. XI)
- Colwell, J. E.; and Suits, G. H.: Yield Prediction by Analysis of Multi-spectral Scanner Data. Final Report 109600-17-F, May 1975. (ERIM vol. X)
- Crane, R. B.; and Reyer, J. F.: Adopting Processing for Landsat Data. Report 109600-14-F, May 1975. (ERIM vol. IX)
- Fifth Monthly Progress Report (August 1975), Tenth International Symposium on Remote Sensing of Environment. Report 114600-5-L, 1975. (ERIM vol. XI)
- Henderson, R. G.; Thomas, G. S.; and Nalepka, R. F.: Methods of Extending Signature and Training Without Ground Information. Final Report 109600-16-F, May 1975. (ERIM vol. X)
- Horwitz, H. M.; Lewis, J. T.; and Pentland, A. P.: Estimating Proportions of Objects From Multispectral Scanner Data. Final Report 109600-13-F, May 1975. (ERIM vol. IX)
- Malila, W. A.; Hieber, R. H.; and Cicone, R. C.: Studies of Recognition With Multitemporal Remote Sensor Data. Final Report 109600-19-F, May 1975. (ERIM vol. X)

Malila, W. A.; Rice, D. P.; and Cicone, R. C.: Final Report on the CITARS Effort by the Environmental Research Institute of Michigan. Report 109600-12-F, Apr. 1975. (ERIM vol. IX)

Proceedings of the Tenth International Symposium on Remote Sensing of Environment, 6-10 October 1975, Volume I. (ERIM vol. XIV)

Proceedings of the Tenth International Symposium on Remote Sensing of Environment, 6-10 October 1975, Volume II. (ERIM vol. XV)

Richardson, W.; and Gleason, J. M.: Multispectral Processing Based on Groups of Resolution Elements. Final Report 109600-18-F, May 1975. (ERIM vol. X)

Seventh Monthly Progress Report (Oct. 1975), Tenth International Symposium on Remote Sensing of Environment. Report 114600-7-L, 1975. (ERIM vol. XI)

Sixth Monthly Progress Report (Sept. 1975), Tenth International Symposium on Remote Sensing of Environment. Report 114600-6-L, 1975. (ERIM vol. XI)

Technical Progress Report for November 1975. Report 119301-1-L. (ERIM vol. XI)

Technical Progress Report for the Period August 15, 1975 Through November 14, 1975. Report 109600-41-L. (ERIM vol. XI)

Technical Progress Report for the Period February 1, 1975 Through April 30, 1975. Report 109600-29-L, May 1975. (ERIM vol. X)

Technical Progress Report for the Period May 15, 1975 Through Aug. 14, 1975. Report 109600-37-L, Aug. 1975. (ERIM vol. XI)

Technical Progress Report for the Period Nov. 1, 1974 Through Jan. 31, 1975. Report 109600-10-L. (ERIM vol. IX)

Turner, R. E.: Atmospheric Effects in Multispectral Remote Sensor Data. Final Report 109600-15-F, May 1975. (ERIM vol. IX)

# INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY

Schafer, R. A.: Data Base Design and Maintenance for the Resource Utilization Monitoring System for the Large Area Crop Inventory Experiment — A Recommended Approach. Report 275-025-021, May 1975. (Rice Univ. vol. II)

Schafer, R. A.; Van Rooy, D. L.; and Lynn, M. S.: The Resource Utilization Monitoring System for the Large Area Crop Inventory Experiment — A Recommended Approach. Report 275-025-020, Feb. 1975. (Rice Univ. vol. II)

Starks, S. A.; de Figueiredo, R. J. P.; and Van Rooy, D. L.: An Algorithm for Optimal Single Linear Feature Extraction From Several Gaussian Pattern Classes. Report 275-025-022 (available also as Elec. Eng. Dept., Math. Sciences Dept., EE Technical Report 7520), Nov. 1975. (Rice Univ. vol. II)

#### KANSAS STATE UNIVERSITY

Feyerherm, A. M.: Prediction of Wheat Yield. Quarterly Progress Report, Aug. 1, 1975. (Kansas State Univ. vol. I)

Feyerherm, A. M.: Prediction of Wheat Yield. Quarterly Progress Report, Nov. 1, 1975. (Kansas State Univ. vol. I)

Feyerherm, A. M.: Providing a Winter Wheat Yield Responsive to Surface and Satellite Meteorological Observations for the Large Area Crop Inventory Project. Monthly Progress Report, Oct. 1, 1975. (Kansas State Univ. vol. I)

# LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY

- Anuta, P. E.: Computer-Aided Analysis Techniques for Remote Sensing Data Interpretation. Report 100675, 1975. (LARS vol. XI-2)
- Anuta, P. E.; and Mobasseri, B.: ERTS Multispectral Image Transformations for Geological Enhancement. Report 022575, 1975. (LARS vol. XIII-1)
- Baker, J. R.; and Mikhall, E. M.: Geometric Analysis and Restitution of Digital Multispectral Scanner Data Arrays. Report 052875, 1975. (LARS vol. 10-II)
- Bartolucci, L. A.; Robinson, B. F.; and Silva, L. F.: Field Measurements of the Spectral Response of Natural Waters. Report 111275, 1975. (LARS vol. XI-2)
- Bartolucci, L. A.; Swain, P. H.; and Wu, C. L.: Selective Radiant Temperature Mapping Using a Layered Classifier. Report 111175, 1975. (LARS vol. XI)
- Bauer, M. E.: The Role of Remote Sensing in Determining the Distribution and Yield of Crops. Report 122075, 1975. (LARS vol. XI-2)
- Bauer, M. E.; Carey, T. K.; Davis, B. J.; and Swain, P. H.: Crop Identification Technology Assessment for Remote Sensing (CITARS). Report 072175, 1975. (LARS vol. 10-II)

- Bizzell, R.; Hall, F.; Feiveson, A.; Bauer, M.; Davis, B.; Malila, W.; and Rice, D.: Results From Crop Identification Technology Assessment for Remote Sensing (CITARS) Project. Report 012176, 1975. (LARS vol. 11-I)
- Carey, T. K.; and Lindenlaub, J. C.: A Case Study Using LARSYS for Analysis of LANDSAT Data. Report 050575, 1975. (LARS vol. 10-III)
- Davis, S. M.: The Focus Series 1975: A Collection of Single-Concept Remote Sensing Educational Materials. Report 052975, 1975. (LARS vol. 10-II)
- DeWitt, D. P.; and Robinson, B. F.: Description and Operation of a Field Rated ERTS-Band Transmissometer. Report 052075, 1975. (LARS vol. XI-2)
- Fleming, M. D.; Berkebile, J. S.; and Hoffer, R. M.: Computer-Aided Analysis of LANDSAT-1 MSS Data: A Comparison of Three Approaches, Including a "Modified Clustering" Approach. Report 072475, 1975. (LARS vol. 11-I)
- Grams, H. L.: LARS Computational Facility Users Guide. Report 110475, 1975. (LARS vol. XI-2)
- Hoffer, R. M.; and Staff: Computer-Aided Analysis of SKYLAB Multispectral Scanner Data in Mountainous Terrain for Land Use, Forestry, Water Resource, and Geologic Applications. Report 121275, 1975. (LARS vol. XI-2)
- Hoffer, R. M.; and Staff: Natural Resource Mapping in Mountainous Terrain by Computer Analysis of ERTS-1 Satellite Data. Report 061575, June 1975. (LARS vol. 11-I)
- Jordan, S. G.; and West, T. R.: Highway Route Location Utilizing Remote Sensing Techniques, Ft. Wayne, Indiana. Report 122475, 1975. (LARS vol. XI-2)
- Kettig, R. L.: Computer Classification of Remotely Sensed Multispectral Image Data by Extraction and Classification of Homogeneous Objects. Information Note 050975, 1975. (LARS vol. 10-II)
- Kettig, R. L.; and Landgrebe, D. A.: Classification of Multispectral Image Data by Extraction and Classification of Homogeneous Objects. Report 062375, 1975. (LARS vol. 10-III)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources and Man's Environment. First Quarterly Progress Report (June 1, 1975 Sept. 30, 1975). Oct. 14, 1975. (LARS vol. 10-III)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources and Man's Environment. Quarterly Report, Oct. 1, 1975 Dec. 31, 1975. Contract NAS9-14016, 1975. (LARS vol. 10-III)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources and Man's Environment. Third Quarterly Report 1974-75. (LARS vol. XI)

- Landgrebe, D. A.; and Potter, A. E.: Final Report. NASA Contract NAS9-14016, T-1039-5, MA-129TA, June 1, 1974 May 31, 1975. (LARS vol. 10-II)
- Lindenlaub, J. C.; Davis, S.M.; and Morrison, D. B.: Bringing Remote Sensing Technology to the User Community. Report 051975, 1975. (LARS vol. 10-II)
- Mausel, P. W.; Todd, W. J.; Baumgardner, M. F.; Mitchell, R. A.; and Cook, J. P.: Evaluation of Surface Water Resources From Machine-Processing of ERTS Multispectral Data. Journal Paper No. 5299. (LARS vol. XI)
- McGillem, C. D.: Interpolation of ERTS-1 Multispectral Scanner Data. Report 022175, 1975. (LARS vol. 11-I)
- Moore, D. S.; Whitsitt, S. J.; and Landgrebe, D. A.: Variance Comparisons for Unbiased Estimators of Probability of Correct Classification. Report 121874, 1975. (LARS vol. XI-2)
- Peterson, J. B.: Quantitative Inventorying of Soil and Land Use Differences by Remote Sensing. Report 063075. (LARS vol. XI)
- Peterson, J. B.; Goodrick, F. E.; and Melhorn, W. N.: Delineation of the Boundaries of a Buried Pre-Glacial Valley With LANDSAT-I Data. Report 100175. (LARS vol. XI)
- Phillips, T. L.; Grams, H. L.; Lindenlaub, J. C.; Schwingendorf, S. K.; Swain, P. H.; and Simmons, W. R.: Remote Terminal System Evaluation. Report 062775, June 1975. (LARS vol. 10-III)
- Stockton, J. G.; Bauer, M. E.; Blair, B. O.; and Baumgardner, M. F.: The Use of ERTS-1 Multispectral Imagery for Crop Identification in a Semi-Arid Climate. Report 040775, 1975. (LARS vol. 10-II)
- Svedlow, M.; McGillem, C. D.; and Anuta, P. E.: Experimental Examination of Similarity Measures and Preprocessing Methods Used for Image Registration. Report 052175, 1975. (LARS vol. 11-I)
- Swain. P. H.; Wu, C. L.; Landgrebe, D. A.; and Hauska, H.: Layered Classification Techniques for Remote Sensing Applications. Report 061275, 1975. (LARS vol. 10-III)
- Wilson, L. L.: Purdue/LARS Digital Display User's Guide. Report 022675, 1975. (LARS vol. XI)

#### PAN AMERICAN UNIVERSITY

Chance, J. E.; and Cantu, J. M.: Appendix. A Study of Plant Canopy Reflectance Models. (Pan American Univ. vol. I)

LeMaster, E. W.: Further Tests of Plant Canopy Reflectance Models and Investigation of Non-Lambertian Properties of Plant Canopies. Final Technical Report, Nov. 1975. (Pan American Univ. vol. I)

LeMaster, E. W.: Further Tests of Plant Canopy Reflectance Models and Investigation on Non-Lambertian Properties of Plant Canopies. Mid-Year Report, Sept. 1, 1974 — March 1, 1975. (Pan American Univ. vol. I)

#### TEXAS A&M UNIVERSITY

Freund, R. J.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Wheat Yield Production Progress Report. Technical Report Y1, Jan. 1975. (Texas A&M Univ. vol. X)

Gianchetta, L. D.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Time Series Forecasts Based on Transfer Function Theory. Technical Report YF3, May 1975. (Texas A&M Univ. vol. X)

Guseman, L. F., Jr.: Feature Selection for Minimum Probability of Error. Final Report, July 1, 1974 — May 31, 1975. (Texas A&M Univ. vol. X)

Guseman, L. F., Jr.: Feature Selection for Minimum Probability of Error. Progress Report, July 1, 1974 to May 31, 1975. (Texas A&M Univ. vol. VIII)

Guseman, L. F., Jr.; and Marion, B. P.: Optimal Selection of Passes. Progress Report 2, Contract NAS9-13894-15, Jan. 1975. (Texas A&M Univ. vol. VIII)

Harlan, J. C.; and Liu, S.: A One Year, One Site LANDSAT Study for Determination of Unharvested Winter Wheat Acreage. Report RSC66, Sept. 1975. (Texas A&M Univ. vol. VIII)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Allowance for Fertilizer Availability in Yield Prediction. Technical Report YF4, Sept. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Allowance for Non-Harvested Wheat Acreage in the LACIE Production Estimates. Technical Report Y2, June 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Control of Measurement Errors in ERTS Sampling. Technical Report PE3, Mar. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Estimation of Acreages From Satellite Data by the Method of Moments. Technical Report PEl, 1975. (Texas A&M Univ. vol. IX) Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Estimation of the Measurement Bias by Regression Techniques. Technical Report PE4, Apr. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Signature Transfer by Variate Transformations. Technical Report ST2, Mar. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. The Treatment of the Defective Area Segments in the LACIE Survey for the U.S.A. Technical Report S5, Apr. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.; and Lamb, D. A.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Formulas for Variance Estimation in Proposed LACIP Sampling Plan. Technical Report S4, Apr. 1975. (Texas A&M Univ. vol. X)

Hartley, H. O.; and Lamb, D. A.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Formulas for Variance Estimation in Proposed LACIP Sampling Plan II. Technical Report S6, Sept. 1975. (Texas A&M Univ. vol. X)

Newton, R. W.: Passive Microwave Data Report. Joint Soil Moisture Experiment at Texas A&M University, June 26 — July 21, 1974. Technical Report RSC-65, Jan. 1975. (Texas A&M Univ. vol. XII)

Progress Report — Analysis of Spectral Data for Wheat, Jan. to March 1975. Report RSC3183-1. (Texas A&M Univ. vol. VIII)

Progress Report — Microwave Soil Moisture Measurements and Analysis, Nov. 1974 to Jan. 1975. Report RSC3058-4. (Texas A&M Univ. vol. VIII)

### TRW, INC.

LACIE Performance Predictor. Volume I — Technical. Report 28234000, Mar. 1975. (TRW vol. I)

LACIE Performance Predictor. Volume II — Cost. Report 28234000, Mar. 1975.  $(TRW \ vol. \ I)$ 

LACIE Performance Predictor FOC CAMS Design Description. Report 28234-6016-RU-00, Dec. 1975. (TRW vol. I)

LACIE Performance Predictor FOC DAPTS Update Requirements. Report 28234-6017-RU-00, Dec. 1975. (TRW vol. I)

LACIE Performance Predictor FOC Functional Description. Report 28234-6015-RU-00, Dec. 1975. (TRW vol. I)

LACIE Performance Predictor FOC YES Design Description. Report 28234-6018-RU-00, Dec. 1975. (TRW vol. I)

LACIE Performance Predictor Initial Operational Capability Program Description, Volume I. Report 28234-6012-RU-00, Nov. 1975. (TRW vol. II)

LACIE Performance Predictor Initial Operational Capability Program Description, Volume II. Report 28234-6013-RU-00, Nov. 1975. (TRW vol. III)

LACIE Performance Predictor Progress Report #1 (Apr. 4, 1975 - May 23, 1975). Report 28234-6001-TU-00, May 23, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #2. Report 28234-6006-TU-00, July 8, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #3. Report 28234-6007-TU-00, Aug. 1, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #4. Report 28234-6008-TU-00, Aug. 29, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #5. Report 28234-6009-TU-00, Oct. 1, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #6. Report 28234-6011-TU-00, Oct. 30, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #7. Report 28234-6014-TU-00, Nov. 26, 1975. (TRW vol. I)

LACIE Performance Predictor Progress Report #8. Report 28234-6019-TU-00, Dec. 29, 1975. (TRW vol. I)

## UNIVERSITY OF CALIFORNIA AT BERKELEY

Colwell, R. N.: Application of Photointerpretative Techniques to Wheat Identification, Signature Extension and Sampling Strategy. Quarterly Progress Report, August 16, 1975 to November 15, 1975, Contract NAS9-14565. (Univ. of Calif. at Berkeley vol. II)

Study-Development of Improved Photointerpretative Techniques to Wheat Identification. Quarterly Progress Report (May 15, 1975 to August 15, 1975), Contract NAS9-14565. (Univ. of Calif. at Berkeley vol. I)

## UNIVERSITY OF HOUSTON

- Brown, D. R.; and O'Malley, M. J.: A Counter Example in Linear Feature Selection Theory. Report 41, Mar. 1975. (Univ. of Houston vol. III)
- Brown, D. R.; and O'Malley, M. J.: Some Results on Contractive Mappings as Related to Pattern Recognition. Report 49, Oct. 1975. (Univ. of Houston vol. IV)
- Coberly, W. A.; and Wiginton, C. L.: UHMLE Program Description User Guide. Report 48, Oct. 1975. (Univ. of Houston vol. IV)
- Lawton, W. M.: Multidimensional Stochastic Approximation Using Locally Contractive Functions. Report 46, Aug. 1975. (Univ. of Houston vol. IV)
- Morrell, J. S.: Application of Matrix Derivatives to Optimization Problems in Statistical Pattern Recognition. Report 45, Aug. 1975. (Univ. of Houston vol. IV)
- Peters, B. C., Jr.; and Walker, H. F.: Addendum to "An Iterative Procedure for Obtaining Maximum Likelihood Estimates of the Parameters for a Mixture of Normal Distributions. Report 47, Sept. 1975. (Univ. of Houston vol. IV)
- Peters, B. C., Jr.; and Walker, H. F.: An Iterative Procedure for Obtaining Maximum-Likelihood Estimates of the Parameters for a Mixture of Normal Distributions. Report 43, July 1975. (Univ. of Houston vol. III)
- Walker, H. F.: Maximum Likelihood Signature Estimation. Report 42, Apr. 1975. (Univ. of Houston vol. III)
- Walker, H. F.: On the Numerical Evaluation of the Maximum Likelihood Estimate of Mixture Means. Report 44, July 1975. (Univ. of Houston vol. III)

#### UNIVERSITY OF KANSAS

- Batlivala, P. P.; and Ulaby, F. T.: Crop Identification From Radar Imagery of the Huntington County, Indiana Test Site. Technical Report 177-58, Nov. 1975. (REDAF 09-03463)
- Bush, T. F.; and Ulaby, F. T.: Radar Return From a Continuous Vegetation Canopy. Technical Report 177-56, Aug. 1975. (REDAF 09-03464)
- Bush, T. F.; and Ulaby, F. T.: Remotely Sensing Wheat Maturation With Radar. Technical Report 177-55, May 1975. (REDAF 08-04048)
- Bush, T. F.; Ulaby, F. T.; and Metzler, T.: Radar Backscatter Properties of Milo and Soybeans. TechnicalReport 177-59, Oct. 1975. (REDAF 09-03533)

Ulaby, F. T.; and Bush, T. F.: Corn Growth as Monitored by Radar. Technical Report 177-57, Nov. 1975. (REDAF 09-03460)

## UNIVERSITY OF TEXAS AT DALLAS

Boullion, T. L.: Some Results on Randomly Missing Data in Discriminant Analysis. (Univ. of Texas at Dallas vol. I)

Odell, P. L.: Statistical Theory and Methodology for Remote Sensing Data Analysis With Special Emphasis on LACIE, June 1, 1974 — May 31, 1975. Available also as JSC-09703. (Univ. of Texas at Dallas vol. II)

Progress Report, June 1, 1975 Through August 31, 1975. (Univ. of Texas at Dallas vol. I)

#### COLORADO STATE UNIVERSITY

Smith, J. A.; Berry, J. K.; and Heimes, F.: Signature Extension for Spectral Variations in Soils. Quarterly Report, Feb. 15, 1976. (Colo. State Univ. vol. III)

#### EARTH SATELLITE CORPORATION

Earthsat Spring Wheat Yield System Test 1975. Final Report, Apr. 1976. (Earthsat Corp. vol. I)

Earthsat Spring Wheat Yield System Test 1975. Final Report, Appendix IV, Apr. 1976. (Earthsat Corp. vol. II)

Earthsat Spring Wheat Yield System Test 1975, Sampling Concept Test. July 1976. (Earthsat Corp. vol. II)

#### ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

Ausherman, D.; Larson, R.; and Liskow, C.: Radar Data Processing and Analysis. Final Report 109600-45-F, Feb. 1976. (ERIM vol. XI)

Center for Remote Sensing Information and Analysis. Status Report, October 1, 1974 to February 29, 1976. Mar. 12, 1976. (ERIM vol. XI)

Final New Technology Report for Contract NAS9-14123. Report 109600-76-NTF, Aug. 1976. (ERIM vol. XVI)

Kauth, R. J.; and Thomas, G. S.: Final Report on System for Analysis of Landsat Agricultural Data: Automatic Computer-Assisted Proportion Estimation of Local Areas. Report 109600-67-F, May 1976. (ERIM vol. XII)

Lambeck, P. F.; and Rice, D. P.: Final Report on Signature Extension Using Transformed Cluster Statistics and Related Techniques. Report 109600-70-F, May 1976. (ERIM vol. XIII)

Malila, W. A.; Cicone, R. C.; and Gleason, J. M.: Wheat Signature Modeling and Analysis for Improved Training Statistics. Final Report 109600-66-F, May 1976. (ERIM vol. XII)

Malila, W. A.; Gleason, J. M.; and Cicone, R. C.: Investigation of Spatial Misregistration Effects in Multispectral Scanner Data. Final Report 109600-68-F, May 1976. (ERIM vol. XIII)

Nalepka, R. F.; and Staff: Technical Progress Report for the Period 15 Nov. 1975 to 14 Feb. 1976. Report 109600-58-L. (ERIM vol. XII)

Richardson, W.; and Pentland, A. P.: Evaluation of Algorithms for Estimating Wheat Acreage From Multispectral Scanner Data. Final Report 109600-69-F, May 1976. (ERIM vol. XIII)

Sadowski, F. G.; and Sarno, J. E.: Additional Studies of Forest Classification Accuracy as Influenced by Multispectral Scanner Spatial Resolution. Technical Memorandum 122700-4-R, Aug. 1976. (ERIM vol. XVI)

Sadowski, F.; and Sarno, J.: Forest Classification Accuracy as Influenced by Multispectral Scanner Spatial Resolution. Final Report 109600-71-F, May 1976. (ERIM vol. XIII)

Technical Progress Report for the Period 17 May 1976 Through 14 August 1976. Report 122700-5-L. (ERIM vol. XVI)

# INSTITUTE FOR COMPUTER SERVICES AND APPLICATIONS, RICE UNIVERSITY

de Figueiredo, R. J. P.; Pau, K. C.; Sagar, A. D.; Starks, S. A.; and Van Rooy, D. L.: An Algorithm for Extraction of More Than One Optimal Linear Feature From Several Gaussian Pattern Classes. Report 275-025-026, Apr. 1976. (Rice Univ. vol. II)

Phase IV of the Rice University Earth Resources Data Analysis Program. Final Report (June 1975 - June 1976). Report 275-025-FPIV. (Rice Univ. vol. II)

Scott, D. W.: Nonparametric Probability Density Estimation by Optimization Theoretic Techniques. Report 275-025-023, Apr. 1976. (Rice Univ. vol. II)

Starks, S. A.; de Figueiredo, R. J. P.; and Van Rooy, D. L.: Classification Improvement by Optimal Dimensionality Reduction When Training Sets Are of Small Size. Report 275-025-025, Apr. 1976. (Rice Univ. vol. II)

Tapia, R. A.; and Van Rooy, D. L.: A Quasi-Newton Approach to Optimization Problems With Probability Density Constraints. Report 275-025-029, June 1976. (Rice Univ. vol. II)

Van Rooy, D. L.: On the Computation and Updating of the Modified Cholesky Decomposition of a Covariance Matrix. Report 275-025-024, May 1976. (Rice Univ. vol. II)

- Van Rooy, D. L.: The Recursive Maximum Likelihood Proportion Estimator User's Guide and Test Results. Report 275-025-028, June 1976. (Rice Univ. vol. II)
- Van Rooy, D. L.; Schafer, R.A.; and Lynn, M. S.: The Use of the Winograd Matrix Multiplication Algorithm in Digital Multispectral Processing. Report 275-025-027, May 1976. (Rice Univ. vol. II)

# LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY

- Berkebile, J.; Russell, J.; and Lube, B.: A Forestry Application Simulation of Man-Machine Techniques for Analyzing Remotely Sensed Data. Report 012376, 1976. (LARS vol. XI-1)
- Bizzell, R.; Hall, F.; Feiveson, A.; Bauer, M.; Davis, B.; Malila, W.; and Rice, D.: Results From the Crop Identification Technology Assessment for Remote Sensing (CITARS) Project. Report 012176, 1976. (LARS vol. XI-1)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources and Man's Environment. Quarterly Report, Jan. 1, 1976 March 31, 1976. (LARS vol. XI-1)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources, and Man's Environment. Quarterly Report, June 1, 1976 to August 31, 1976. Report DRL-T-1314. (LARS vol. XII)
- Landgrebe, D. A.; and Potter, A. E.: Final Report, T-1039, MA-129TA for June 1, 1975 May 31, 1976. (LARS vol. XII)
- Lindenlaub, J. C.; and Lube, B. M.: Matrix of Educational and Training Materials in Remote Sensing. Report 052576, 1976. (LARS vol. XI-1)
- Mausel, P. W.; Todd, W. J.; and Baumgardner, M. F.: An Analysis of Metropolitan Land-Use by Machine Processing of Earth Resources Technology Satellite Data. Report 031276, 1976. (LARS vol. XI-1)
- Mausel, P. W.; Todd, W. J.; Baumgardner, M. F.; Mitchell, R. A.; and Cook, J. P.: Evaluation of Surface Water Resources From Machine-Processing of ERTS Multi-Spectral Data. Report 030576, 1976. (LARS vol. XI-1)
- Todd, W. J.; Mausel, P. W.; and Baumgardner, M. F.: Urban Land Use Monitoring From Computer-Implemented Processing of Airborne Multispectral Data. Report 032576, 1976. (LARS vol. XI-1)

#### PAN AMERICAN UNIVERSITY

LeMaster, E. W.: Experimental Tests and Model Calculations on Wheat Varieties Grown in India/Pakistan and in Texas. Mid-Year Report, Sept. 1, 1975 to March 1, 1976. (Pan American Univ. vol. I)

#### TEXAS A&M UNIVERSITY

Book, D.; Hartley, H. O.; Lamb, J.; Larsen, G.; and Trenchard, M.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. Small Area Estimates of Historical Wheat Acreages for Russia and China. Technical Report S7, Mar. 1976. (Texas A&M Univ. vol. X)

Development and Selection of Clustering Procedures. Status Report, June 1, 1976 — Aug. 31, 1976. (Texas A&M Univ. vol. XI)

Guseman, L. F., Jr.; Peters, B. C., Jr.; and Swasdee, M.: Estimating Normal Mixture Parameters From the Distribution of a Reduced Feature Vector. Report 11, Contract NAS9-14689, Nov. 1976. (Texas A&M Univ. vol. XI)

Hartley, H. O.: Sampling Strategies and Acreage Estimation Techniques for the Large Area Crop Inventory. An Outline of Multiyear Estimates in the LACIE Sampling Plan. Technical Report S8, Mar. 1976. (Texas A&M Univ. vol. X)

Newton, R. W.; and Tesch, E. A.: Joint Soil Moisture Experiment Ground Based Measurements at Texas A&M University, July 13 — July 25, 1975. Technical Report RSC-71, Jan. 1976. (Texas A&M Univ. vol. XII)

Walton, J. R.: Observations on Minimum Variance Proportion Estimation. Report 5, Feb. 1976. (Texas A&M Univ. vol. X)

#### TRW, INC.

LACIE Performance Predictor DAPTS Update Design Description. Report 28234-6021-RU-00, Mar. 1976. (TRW vol. IV)

LACIE Performance Predictor Final Operational Capability Program Description - Volume I. Report 28234-6027-RU-00, May 1976. (TRW vol. V)

LACIE Performance Predictor Final Operational Capability Program Description - Volume II. Report 28234-6028-RU-00, May 1976. (TRW vol. VI)

LACIE Performance Predictor Final Operational Capability Program Description — Volume III. Report 28234-6029-RU-00, May 1976. (TRW vol. VII)

LACIE Performance Predictor FOC CAS Design Description. Report 28234-6022-RU-00, Mar. 1976. (TRW vol. IV)

LACIE Performance Predictor FOC Users Manual. Report 28234-6025-RU-00, May 1976. (TRW vol. IV)

LACIE Performance Predictor Progress Report #9. Report 28234-6020-TU-00, Jan. 30, 1976. (TRW vol. IV)

LACIE Performance Predictor Progress Report #10. Report 28234-6023-TU-00, Mar. 5, 1976. (TRW vol. IV)

LACIE Performance Predictor Progress Report #12. Report 28234-6026-TU-00, May 1, 1976. (TRW vol. IV)

#### UNIVERSITY OF CALIFORNIA AT BERKELEY

Colwell, R. N.: Application of Photointerpretative Techniques to Wheat Identification, Signature Extension and Sampling Strategy. Quarterly Progress Report, Contract NAS9-14565, November 16, 1975 to February 15, 1976. Series 17, Issue 21, 1976. (Univ. of Calif. at Berkeley vol. II)

Colwell, R. N.; Hay, C. M.; and Thomas, R. W.: Application of Photointerpretative Techniques to Wheat Identification, Signature Extension and Sampling Strategy. Final Report for Tasks 4.1.1.1a and 4.1.3.1b, May 15, 1975 to May 14, 1976. Quarterly Progress Report for Tasks 4.1.1.2f(1) and 4.1.1.2f(3), February 16, 1976 to May 14, 1976. Series 17, Issue 33, May 14, 1976. (Univ. of Calif. at Berkeley vol. II)

Colwell, R. N.; Hay, C. M.; Thomas, R. W.; and Benson, A. S.: Development of Techniques for Producing Static Strata Maps and Development of Photointerpretative Methods Based on Multitemporal Landsat Data. Quarterly Progress Report, Contract NAS9-14565, May 15, 1976 to August 14, 1976. Series 17, Issue 85, 1976. (Univ. of Calif. at Berkeley vol. II)

Colwell, R. N.; Hay, C. M.; Thomas, R. W.; and Benson, A. S.: Development of Techniques for Producing Static Strata Maps and Development of Photointerpretation Methods Based on Multitemporal Landsat Data. Six Month Summary Progress Report, Contract NAS9-14565, May 15, 1976 to November 14, 1976. Series 18, Issue 2, 1976. (Univ. of Calif. at Berkeley vol. II)

#### UNIVERSITY OF HOUSTON

Brown, D. R.; and O'Malley, M. J.: The Role of Eigenvalues in Linear Feature Selection Theory. Report 61, Dec. 1976. (Univ. of Houston vol. IV)

- Coberly, W. A.: Program Documentation SIGEXT, EOD-LARSYS Version of UHMLE. Report 53, Mar. 1976. (Univ. of Houston vol. IV)
- Coberly, W. A.: User's Guide UHMLE/RTCC Version. Report 52, Mar. 1976. (Univ. of Houston vol. IV)
- Coberly, W. A.; Tubbs, J. D.; and Hinman, L.: User's Guide: Datext. Report 58, Aug. 1976. (Univ. of Houston vol. IV)
- Decell, H. P.; and Marani, S. K.: Feature Combinations and the Bhattacharyya Criterion. Report 55, June 1976. (Univ. of Houston vol. IV)
- Decell, H. P.; and Mayekar, S. M.: Feature Combinations and the Divergence Criterion. Report 56, June 1976. (Univ. of Houston vol. IV)
- Marani, S. K.: Program Documentation B-Average Bhattacharyya Distance. Report 57, Aug. 1976. (Univ. of Houston vol. IV)
- Peters, B. C., Jr.; Redner, R.; and Decell, H. P., Jr.: Characterizations of Linear Sufficient Statistics. Report 59, Aug. 1976. (Univ. of Houston vol. IV)
- Peters, B. C., Jr.; and Walker, H. F.: An Iterative Procedure for Obtaining Maximum-Likelihood Estimates of the Parameters for a Mixture of Normal Distributions, II. Report 51, Feb. 1976. (Univ. of Houston vol. IV)
- Peters, B. C., Jr.; and Walker, H. F.: The Numerical Evaluation of the Maximum-Likelihood Estimate of a Subset of Mixture Proportions, II. Report 50, Feb. 1976. (Univ. of Houston vol. IV)
- Sparra, J.: A Stochastic Approximation Algorithm for Estimating Mixture Proportions. Report 60, Nov. 1976. (Univ. of Houston vol. IV)
- Walker, H. F.: The Numerical Evaluation of Max Likelihood Estimates of the Parameters for a Mixture of Normal Distributions From Partially Identified Samples. Report 54, June 1976. (Univ. of Houston vol. IV)

#### UNIVERSITY OF KANSAS

- Attema, E. P. W.; and Ulaby, F. T.: Modeling a Vegetation Canopy at Microwave Frequencies as a Water Cloud. Technical Report 330-2, Sept. 1976. (REDAF 09-03539)
- Attema, E. P. W.; and Ulaby, F. T.: 35 GHz Radar Scatterometer System. Technical Report 330-3, Dec. 1976. (REDAF 09-03540)
- Bush, T. F.; and Ulaby, F. T.: Crop Classification With Radar: Preliminary Results. Technical Report 330-1. (REDAF 09-03538)

### ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

- Cicone, R. C.; Malila, W. A.; Crist, E. P.; and Nalepka, R. F.: Investigation of Techniques for Inventorying Forested Regions. Volume II: Forestry Information System Requirements and Joint Use of Remotely Sensed and Ancillary Data. Final Report 122700-35-F2, Nov. 1977. (ERIM vol. XVIII)
- Kauth, R. J.; Richardson, W.; and Nalepka, R. F.: Procedure B: A Multisegment Training Selection and Proportion Estimation Procedure for Processing Landsat Agricultural Data. Final Report 122700-31-F, Nov. 1977. (ERIM vol. XVIII)
- Lambeck, P. F.; and Nalepka, R. F.: Signature Extension Preprocessing for Landsat MSS Data. Final Report 122700-32-F, Nov. 1977. (ERIM vol. XVII)
- Malila, W. A.; Gleason, J. M.; and Nalepka, R. F.: Investigations of Spectral Separability of Small Grains, Early Season Wheat Detection, and Multicrop Inventory Planning. Final Report 122700-34-F, Nov. 1977. (ERIM vol. XVII)
- Nalepka, R. F.; Kauth, R. J.; Lambeck, P. F.; Pentland, A. P.; and Malila, W. A.: Analysis of Scanner Data for Crop Inventory. Quarterly Progress Report, February 15, 1977 to May 14, 1977. Report 122700-26-L, June 1977. (ERIM vol. XVII)
- Nalepka, R. F.; Kauth, R. J.; Lambeck, P. F.; Pentland, A. P.; Cicone, R. C.; and Malila, W. A.: Analysis of Scanner Data for Crop Inventory. Quarterly Progress Report, May 15, 1977 to Sept. 9, 1977. Report 122700-28-L. (ERIM vol. XVII)
- Nalepka, R. F.; Kauth, R. J.; Lambeck, P. F.; Pentland, A. P.; and Malila, W. A.: Analysis of Scanner Data for Crop Inventory. Quarterly Progress Report, Nov. 15, 1976 to Feb. 14, 1977. Report 122700-23-L, Mar. 1977. (ERIM vol. XVII)
- Pentland, A. P.: Evaluation of Signature Extension Algorithms. Interim Technical Report 122700-29-T, Sept. 1977. (ERIM vol. XVII)

#### KANSAS STATE UNIVERSITY

Estimated Winter Wheat Yield From Crop Growth Predicted by Landsat. Final Report: Contract NAS9-14899-3S, for Period April 1, 1977 to December 31, 1977. (Kansas State Univ. vol. I)

# LABORATORY FOR APPLICATIONS OF REMOTE SENSING, PURDUE UNIVERSITY

- Adrien, P. M.; and Vanderbilt, V. C.: Techniques for Estimating Scales and Areas for Landsat Data. Technical Report 081777, 1977. (LARS vol. XIII-1)
- Bauer, M. E.; Hixson, M. M.; Davis, B. J.; and Etheridge, J. B.: Crop Identification and Area Estimation by Computer Aided Analysis of Landsat Data. Report 063077, 1977. (LARS vol. XIII-1)
- Bauer, M. E.; Silva, L. F.; Hoffer, R. M.; Baumgardner, M. F.; and Landgrebe, D. A.: Final Report I, Agricultural Scene Understanding. T-1314/4, MA-129TA (LARS Report 112677), Nov. 1977. (LARS vol. XIV)
- Blair, B. O.; and Baumgardner, M. F.: Detection of the Green and Brown Wave in Hardwood Canopy Covers Using Multidate, Multispectral Data From LANDSAT-1. Report 121277, 1977. (LARS vol. XIII-1)
- Bochenek, Z. T.; and Madej, W. A.: Land Use Classification of the Warsaw, Poland Area by Digital Analysis of Landsat Data. Technical Report 090777, 1977. (LARS vol. XIII-1)
- Davis, B. J.; Lindenlaub, J. C.; Phillips, T. L.; Sand, C. R.; Anuta, P. E.; and Landgrebe, D. A.: Final Report II, Processing Techniques Development. T-1314/4, MA-129TA (LARS Report 112777), Nov. 1977. (LARS vol. XIV)
- Hanley, E. J.: A Mathematical Basis for the Detection of Jaundice by Skin Reflectance Analysis. Report 022277, Feb. 1977. (LARS vol. XIII-1)
- Kast, J. L.; Davis, B. J.; and Landgrebe, D. A.: Final Report III, Test of Spectral/Spatial Classifier. T-1314/4, MA-129TA (LARS Report 112877), Nov. 1977. (LARS vol. XV)
- Kirschner, F. R.; Kaminsky, S. A.; Weismiller, R. A.; Sinclair, H. R.; and Hinzel, E. J.: Soil Map Unit Composition Assessment by Digital Analysis of Landsat Data. Technical Report 092377, 1977. (LARS vol. XIII-1)
- Kristof, S. J.; Baumgardner, M. F.; Zachary, A. L.; and Stoner, E. R.: Comparing Soil Boundaries Delineated by Digital Analysis of Multispectral Scanner Data From High and Low Spatial Resolution Systems. Report 082477, 1977. (LARS vol. XIV)
- Kristof, S. J.; and Weismiller, R. A.: Computer-Aided Analysis of Landsat Data for Surveying Texas Coastal Zone Environments. Technical Report 090677, 1977. (LARS vol. XIII-1)
- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources, and Man's Environment. Quarterly Report, June 1, 1977 August 31, 1977. Report 082977, Contract NAS9-14970, 1977. (LARS vol. XIV)

- Landgrebe, D. A.: Research in Remote Sensing of Agriculture, Earth Resources, and Man's Environment. Quarterly Report, December 1, 1976 to February 28, 1977, Contract NAS9-14970. (LARS vol. XII)
- Landgrebe, D. A.; and Erickson, J. D.: Annual Technical Summary Report, Contract NAS9-14970, June 1, 1976 May 31, 1977. T-1314/5, MA-657T, 1977. (LARS vol. XIV)
- Landgrebe, D. A.; and Erickson, J. D.: Final Technical Report, Contract NAS9-14970, June 1, 1976 May 31, 1977. Volume 1, T-1314/4, MA-129TA, 1977. (LARS vol. XIII)
- Landgrebe, D. A.; and Erickson, J. D.: Final Technical Report, Contract NAS9-14970, June 1, 1976 May 31, 1977. Volume 2, T-1314/4, MA-129TA, 1977. (LARS vol. XIII)
- Landgrebe, D. A.; and Erickson, J. D.: Final Technical Report, Contract NAS9-14970, June 1, 1976 May 31, 1977. Volume 3, T-1314/4, MA-129TA, 1977. (LARS vol. XIII)
- Lindenlaub, J. C.; and Russell, J. D.: The LARSYS Educational Package: Instructors Notes for Use With the Data 100. Report 110577, 1977. (LARS vol. XV)
- McGillem, C. D.; and Chu, N. Y.: A Simplified Design Procedure for Image Restoration and Enhancement Filters. Report 091577, 1977. (LARS vol. XIII-1)
- Russell, J. D.: Students Notes for the Data 100 Remote Terminal\* •• A "Hands-on" Experience •• (\*Using either a 2741 typewriter, or CRT typewriter).

  Report 110777, 1977. (LARS vol. XIII-1)
- A Satellite View of Indiana. Report 092177, 1977. (LARS vol. XIII-1)
- Scholz, D.; Russell, J.; Lindenlaub, J.; and Swain, P.: A Case Study Using Extraction and Classification of Homogeneous Objects (ECHO) for Analysis of Multispectral Scanner Data. Report 090177, 1977. (LARS vol. XIII-1)
- Student Notes for Demonstration of LARSYS on a Data 100 Remote Terminal. Report 110677, 1977. (LARS vol. XIII-1)
- Swain, P. H.: Advancements in Machine-Assisted Analysis of Multispectral Data for Land Use Applications. Report 062177, 1977. (LARS vol. XIII-1)
- Swain, P. H.: In Perspective: Meeting the Image Processing Challenge for Remote Sensing. Technical Report 110877, 1977. (LARS vol. XIII-1)
- Swain, P. H.; and Hauska, H.: The Decision Tree Classifier: Design and Potential. Report 072277, 1977. (LARS vol. XIII-1)

Weismiller, R. A.; Kristof, S. J.; Scholz, D. K.; Anuta, P. E.; and Momin, S. M.: Evaluation of Change Detection Techniques for Monitoring Coastal Zone Environments. Report 062277, 1977. (LARS vol. XIII-1)

Whitsitt, S. J.; and Landgrebe, D. A.: Error Estimation and Separability Measures in Feature Selection for Multiclass Pattern Recognition. Report 082377, 1977. (LARS vol. XIII-1)

#### TEXAS A&M UNIVERSITY

Bryant, J.: AMOEBA — A Spatial Clustering Algorithm for Multitemporal LANDSAT Data. Report 15, Aug. 1977. (Texas A&M Univ. vol. XI)

Bryant, J.; and Guseman, L. F., Jr.: Distribution — Free Linear Feature Selection. Report 12, Contract NAS9-14689, June 1977. (Texas A&M Univ. vol. XII)

Clark, B. V.; and Blanchard, B. J.: Mini-Computer Software for Analyzing Passive Microwave Image System (PMIS) Data in Support of Watershed Studies. Technical Report RSC-82, Jan. 1977. (Texas A&M Univ. vol. XII)

Guseman, L. F., Jr.: Development and Selection of Clustering Procedures. Final Report, June 1, 1977 to November 30, 1977. Report 7S. (Texas A&M Univ. vol. XIII)

Hansen, C. M.: Thermal Microwave Emission From an Inhomogeneous Half-Space. Technical Report RSC-84, May 1977. (Texas A&M Univ. vol. XII)

Jean, B. R.; Newton, R. W.; McClellan, W. R., III; and Clark, B. V.: Improvements and Modifications to the NASA Microwave Signature Acquisition System. Interim Report RSC3308-1, Apr. 1977. (Texas A&M Univ. vol. XII)

JSME Scatterometer Data Processing. Final Report RSC-3337, Aug. 1977. (Texas A&M Univ. vol. XI)

Microwave Soil Moisture Measurements and Analysis. Progress Report RSC-9/3058-9, July 31, 1977. (Texas A&M Univ. vol. XIII)

Newton, R. W.: Microwave Remote Sensing and Its Application to Soil Moisture Detection. Technical Report RSC-81, Jan. 1977. (Texas A&M Univ. vol. XI)

#### UNIVERSITY OF CALIFORNIA AT BERKELEY

Colwell, R. N.; Hay, C. M.; Thomas, R. W.; and Benson, A. S.: Development of Techniques for Producing Static Strata Maps and Development of Photointerpretive Methods Based on Multitemporal Landsat Data. Quarterly Progress Report, 15 Feb. 1977 to 14 May 1977. Series 18, Issue 60, Aug. 5, 1977. (Univ. of Calif. at Berkeley vol. III)

Colwell, R. N.; Hay, C. M.; Thomas, R. W.; and Benson, A. S.: Development of Techniques for Producing Static Strata Maps and Development of Photointerpretive Methods Based on Multitemporal Landsat Data. Quarterly Progress Report, 15 November 1976 to 14 February 1977. (Univ. of Calif. at Berkeley vol. III)

#### UNIVERSITY OF HOUSTON

Decell, H. P., Jr.; and Coberly, W. A.: A Review of the LEC Performance Evaluation of UHMLE. Report 62, Jan. 1977. (Univ. of Houston vol. V)

Peters, C.: Sufficient Statistics for Mixtures of Measures in a Homogeneous Family. Report 64, Mar. 1977. (Univ. of Houston vol. V)

Peters, B. C., Jr.; Redner, R.; and Decell, H. P., Jr.: Characterizations of Linear Sufficient Statistics. Report 65, Oct. 1977. (Univ. of Houston vol. V)

Tally, W.: On the Convergence of Optimal Linear Combination Procedures. Report 63, Feb. 1977. (Univ. of Houston vol. V)

#### UNIVERSITY OF KANSAS

Batlivala, P. P.: Feasibility of Monitoring Soil Moisture Using Active Microwave Remote Sensing. Technical Report 264-12, Jan. 1977. (REDAF 09-03643)

Bush, T. F.; and Ulaby, F. T.: Cropland Inventories Using an Orbital Imaging Radar. Technical Report 330-4, Jan. 1977. (REDAF 09-03661)